

FACE INVESTIGATION

SUBJECT: Tree Trimmer Dies When Truck-Mounted Aerial Bucket Arm Collapsed

SUMMARY: A male tree trimmer (the victim) died when the boom of a truck-mounted aerial lift collapsed while he was trimming trees from the bucket (Figure 1). The bucket crashed to the ground, after first striking the truck bed. The victim had not been wearing a safety harness with lanyard at the time the boom collapsed, and he was thrown from the bucket. A co-worker was clearing brush in the vicinity of the truck at the time of the incident when he heard a sound and turned toward the truck. He saw the bucket crash to the ground, with the victim falling from the bucket after it struck the truck. The co-worker used a cell phone to call for emergency services. EMS services arrived and observed the victim was breathing. He was transported to the hospital, where he was pronounced dead. The FACE investigator concluded that, to prevent similar occurrences, employers should :



Figure 1. Photo of the truck and aerial lift involved in incident.

- **ensure that appropriate fall protection equipment is available and correctly used when working from elevations where there is danger of falling.**
- **visually inspect metal parts of booms that bear heavy loads to detect cracks in metal or other signs of damage**

INTRODUCTION:

On October 16, 2002, a 44-year-old male tree trimmer died while trimming trees from a raised bucket on a truck-mounted aerial lift. The Wisconsin FACE field investigator learned of the incident from the Area OSHA office on the day it occurred. The FACE investigator conducted a site visit on October 17, 2002 and interviewed the employer and police responders. Later the investigator reviewed the death certificate and the coroner and police reports.

This incident occurred in the yard of a private residence where the company had been contracted to trim and fell several trees. The company owner had purchased the business from his father about 10 years ago, after working in the business for several years. The victim had also worked for the owner's father for about three years before the ownership was transferred. In addition to the owner and victim, one other worker was employed at the company. During the winter, the company did snow removal, while summer work

was primarily tree trimming. There had been no serious work injuries or fatalities at the company.

Employees learned their jobs through on-the-job training and experience. The owner and victim were experienced in operating the boom truck, and also operated a skid loader, tractor, chipper, and trucks used for removing tree debris. The co-worker felled and cut trees from the ground, and cleaned brush. The owner had purchased the 25-year-old truck-mounted boom about ten years before the incident. He contracted with an aerial truck service company to perform repairs and conduct annual inspections. The most recent inspection of the aerial lift had been conducted the week before the incident. At that time, the service company had tightened cables and bolts, replaced hydraulic cylinder valves, hoses and fluids, and lubricated fittings and knuckle joints. The owner usually did a daily visual check of the cables and hydraulic lines before the lift was put into service. At the end of the day, he would grease about 12 grease spots before the truck was stored for the evening. Since the inspection, the lift had been used on at least four days without problems. The owner had operated the lift the day before the incident occurred. The company owner provided fall protection equipment for the workers, and company policy required employees to wear it whenever working at elevations in the aerial bucket.

INVESTIGATION:

On the day of the incident, the victim and the co-worker started working around 8:30. After delivering a load of cut wood, they got the truck with the aerial lift from the garage and went to the residence where they were scheduled to cut several trees. They cleared brush on the ground to have a space to back the truck into, then cut small trees for about an hour. The victim put on his safety harness, went into the aerial bucket, and elevated the bucket to its full 40-foot length to trim limbs from the top of a tree. It is unknown if the victim attached a lanyard to the harness and/or the bucket. After about 30 minutes, he lowered the bucket, removed his harness, and helped the co-worker clear brush from the truck's vicinity. Then they took a break, eating their lunch in the truck cab.

When they returned to work, the victim went back into the bucket with a small chainsaw, but did not put his safety harness on. He elevated the bucket to around 40 feet again, and cut about five limbs while the co-worker operated the chipper on the ground. While the victim was in the elevated bucket, the upper boom section swung down and struck the back of the truck. The employee's chest struck the side of the bucket, then he fell onto the ground. The co-worker heard a noise, and turned to look toward the truck. The co-worker used a cell phone to call for emergency services. EMS services arrived and observed the victim was breathing. He was transported to the hospital, where he was pronounced dead.

While searching the scene, police discovered a portion of a metal casting in the grass under where the boom had been elevated (Figure 2). The piece had broken off a bracket surrounding a hydraulic cylinder that had held the cables to support the boom.



Figure 2. Broken metal casting from boom support. Discolored area matches area on broken support bracket (Figure 3).



The piece of support bracket that had broken off, and the two sides of the remaining support bracket showed an area of discoloration that may indicate the location of a pre-cracked and weakened area of the casting (Figure 3).

Figure 3. Discolored area on bracket.

CAUSE OF DEATH: The official cause of death was massive chest trauma.

RECOMMENDATIONS/DISCUSSION

Recommendation #1. : Employers should ensure that appropriate fall protection equipment is available and correctly used when working from elevations where there is danger of falling.

Discussion: The company had provided appropriate fall protection equipment on the aerial truck, a safety belt and lanyard to be secured to an anchor point inside the bucket. However, the victim was not wearing the safety equipment while inside the bucket as required by the Code of Federal Regulations 1910.67 (c) 2)(v) which states "A body belt shall be worn and a lanyard attached to the boom or basket when working from an aerial lift." Employers should ensure that workers follow established procedures for wearing fall protection equipment. Use of fall protection equipment may not have prevented the victim from being injured when the bucket hit the truck, but it could have prevented his falling from the bucket to the ground. In this case, the victim's fatal injuries were incurred when his chest struck the side of the bucket when the bucket struck the truck.

Recommendation #2. Visually inspect metal parts of booms that bear heavy loads to detect cracks in metal or other signs of damage.

Discussion: In this instance, it could not be determined whether or not a pre-existing crack was present when the incident occurred. If a crack did exist on the bracket, it may have been detectable by a visual inspection of the boom; daily visual inspections and maintenance checks to identify potential hazards should be performed prior to placing machinery into operation. Additionally, the employer might consider employing a method to test for metal cracks that involves placing an electric charge on the parts, then applying a dust material that collects in the cracks and makes them visible. While this method of testing might be economically unfeasible to perform on a regular basis, it could be performed annually or biannually. The test was not done as part of the annual inspection completed by the inspection company.